

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. (Currently Amended) A method of determining the service metal temperature of a  $\gamma/\gamma'$  MCrAlY-coated component applied to a component after the use of the component in a high temperature environment, where the  $\gamma/\gamma'$ -MCrAlY-coating applied to the component exhibits a non-equilibrium  $\gamma/\gamma'$ -microstructure at a temperature lower than the temperature during operation and the depletion of chromium from the  $\gamma/\gamma'$ -MCrAlY-coating still allows the  $\alpha$ -Cr phase to form, the method comprising the steps of:

- (a) measuring qualitatively impedance curves or measuring the coating electrical conductivity and magnetic permeability of the non-equilibrium MCrAlY-coating of the component in the post-service condition at different locations of the components component by means of a multi-frequency eddy current system; and
- (b) then subjecting the coated component to a heat treatment to transform the MCrAlY coating into an equilibrium microstructure of the coating;
- (c) then measuring qualitatively impedance curves or measuring the coating electrical conductivity and magnetic permeability of the equilibrium MCrAlY-coating at different locations of the component by means of a multi-frequency eddy current system; and
- (d) determining the exposure temperature of said the different locations of the components component from based on the difference in the measured

~~conductivity and permeability qualitatively impedance curves or the measured conductivities and permeabilities, before and after the heat treatment according to (b).~~

2. (Currently Amended) The method according to claim 1, wherein the method is applied for a coating ~~consisting~~ consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, Rest ~~rest~~ Ni and unavoidable impurities.

3. (Currently Amended) The method according to claim 1, ~~wherein using the method for which comprises~~ determining the service metal temperature of a gas turbine blade.

4. (New) The method according to claim 2, which comprises determining the service metal temperature of a gas turbine blade.

5. (New) The method according to claim 1, wherein:

- (a) comprises measuring qualitatively impedance curves of the non-equilibrium MCrAlY-coating of the component in the post-service condition at the different locations of the component;
- (c) comprises measuring qualitatively impedance curves of the equilibrium MCrAlY-coating at the different locations of the component; and
- (d) comprises determining the exposure temperature of the different locations of the component based on the difference in the measured qualitatively impedance curves, before and after the heat treatment according to (b).

6. (New) The method according to claim 5, wherein the coating consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, rest Ni and unavoidable impurities.

7. (New) The method according to claim 6, which comprises determining the service metal temperature of a gas turbine blade.

8. (New) The method according to claim 5, which comprises determining the service metal temperature of a gas turbine blade.

9. (New) The method according to claim 1, wherein:

(a) comprises measuring the coating electrical conductivity and magnetic permeability of the non-equilibrium MCrAlY-coating of the component in the post-service condition at the different locations of the component;

(c) comprises measuring the coating electrical conductivity and magnetic permeability of the equilibrium MCrAlY-coating at the different locations of the component; and

(d) comprises determining the exposure temperature of the different locations of the component based on the difference in the measured conductivities and permeabilities, before and after the heat treatment according to (b).

10. (New) The method according to claim 9, wherein the coating consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, rest Ni and unavoidable impurities.

11. (New) The method according to claim 10, which comprises determining the service metal temperature of a gas turbine blade.

12. (New) The method according to claim 9, which comprises determining the service metal temperature of a gas turbine blade.